A STUDY OF ATTITUDES OF HOMEMAKERS CONCERNING THEIR ROLE IN A GLASS RECYCLING PROGRAM IN STILLWATER, OKLAHOMA

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PREFACE

Cooperation is needed from every American if we are to successfully conserve our environment. The attitude each individual has concerning his role in an environmental program will determine the success of the program. This study is primarily concerned with the attitudes homemakers have toward their role in a glass recycling project.

The writer wishes to express her deepest gratitude to Mrs. Christine Salmon, Associate Professor of Housing and Interior Design, Oklahoma State University, for her guidance and suggestions. Indebtedness is also due members of the advisory committee, Dr. Florence McKinney, Professor and Head, Department of Housing and Interior Design, Oklahoma State University, and Miss Leevera Pepin, Assistant Professor of Housing and Interior Design, Oklahoma State University. The writer is grateful to Mr. James Mayo for his contribution in development of the statistical technique used in this study.

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CHAPTER I

INTRODUCTION

The United States is trying desperately to find a place to put our trash. This country produces three and one-half billion tons of solid waste each year, and this mountain of trash creates a huge environmental problem (1). The large amount of solid waste is mainly the result of modern packaging. Nearly everything a person buys, especially food items, is wrapped or packaged in containers which are discarded almost immediately. This practice cannot continue.

Approximately 212 million tons of domestic and commercial wastes are produced in the United States each year (1). This figure includes the discards from homes, shopping centers, hotels and offices. In a report published in May of 1969, the Office of Science and Technology states that the solid waste being generated per person comes to about 3.5 pounds per day from domestic consumption and 2.3 pounds per day from commercial use (2). A total of 5.8 pounds per person, per day. The report, for the year of 1967, also states that 1.5 pounds of the 5.8 is lost between generation and collection, leaving 4.2 pounds per person to be disposed of each day. According to this figure, the total amount of waste that was actually collected and disposed of by municipal systems was, in 1967, 150 million tons. Glass containers, bottles and jars made up approximately five per

cent of six and one-half million tons (1).

Glass volume refuse is more of a problem for refuse handlers than is its weight. Salvage is a means of reducing the total volume of waste as well as a means of alleviating the disposal problem. Proper salvage techniques reduce volume by more than 75 per cent, and conserves natural resources while doing so. When glass containers are ground into fragments, they take up 90 to 95 per cent less space (1). Therefore, if glass is properly disposed of it does not have to be a big problem to the municipal system.

Glass containers, such as beverage bottles, which are undamaged may be used again. Glass which has been damaged can be pulverized and used again as cullet for making new glass. Outside the glass industry, research specialists have developed uses for glass as a road building material, bricks, and a "wool" like fiber (3). There is a market in Oklahoma for glass in the form of chicken grit.

Glass which is not properly disposed of becomes litter. Since it is inert and thus does not rust, rot, or mold, it will not cause soil pollution, but it does cause visual pollution.

The consumer has demanded convenience wherever he can get it, and the non-returnable bottle and the glass containers are the result of this convenience trend. We must devise ways of collecting the discarded material, and we must educate people at all levels to understand the needs and advantages of adequate separation at the point of generation, and inform them of the items that are salvable. Saving the salvable must become habit.

Statement of the Problem

Currently "sanitary landfill" is the method of disposal used by the City of Stillwater for the disposal of all the waste it collects, including waste which could be reused if it were collected separately. Although the sanitary landfill is serving the city now, new methods of disposal need to be investigated for the future. The method of separate collection of solid waste for the purpose of recycling is a method to consider.

If the city were to initiate a separate collection program, the municipal government would need to know the attitudes of the homemakers of Stillwater concerning their participation in such a program.

Purpose of the Study

The purpose of this study is to find out the attitudes of Stillwater homemakers concerning their roles in a glass recycling program which involves separate collection of glass for the purpose of recycling. This researcher would like to know if there is a difference in attitudes of homemakers of different ages and with different size families.

Hypotheses

The following hypotheses were formulated as a basis for this study:

Hypothesis I.

The age of a homemaker makes no difference in her willingness to cooperate in a glass recycling program.

Sub-Hypothesis. The age of a homemaker makes a difference in her willingness to cooperate in a glass recycling program.

Hypothesis II.

The composition of the family makes no difference in a homemaker's willingness to cooperate in a glass recycling program.

Sub-Hypothesis. The composition of the family makes a difference in a homemaker's willingness to cooperate in a glass recycling program.

Scope of the Study

The sample includes a random selection of 200 Stillwater homemakers. The information obtained by interviews through the use of a questionnaire will pertain to one aspect of the solid waste problem, that of separate collection of glass, and the attitudes of homemakers toward their responsibilities in this type of environmental control.

Procedures

The following procedures are to be used in this study:

1. Permission to conduct the study obtained from the Assistant City Manager in Stillwater, Oklahoma.
2. A questionnaire developed to secure the necessary information from the randomly selected participants.
3. Pretest questionnaire in a graduate research methods class. (None of the members of this class were to be used in the population). Revise the questionnaire, using the recommendations obtained from the pretest.
4. Interviews conducted by students in an upper division

Housing and Interior Design class using the questionnaire designed by this researcher.

5. Data computed and analyzed.
6. Conclusions drawn and recommendations made for future studies.

Summary

This chapter has presented the problem, hypotheses, scope, and procedures involved in this study. Chapter II will review relevant literature. The procedures will be discussed in Chapter III and the data will be presented and analyzed in Chapter IV. The study conclusions and recommendations for future studies will be given in Chapter V.

CHAPTER II

REVIEW OF LITERATURE

Today, a problem of cities is trash. Cities must collect it, bury or burn it. Policies for Solid Waste Management, a government publication states that collection, handling, and transportation of urban solid waste requires about 80 per cent of the total systems-operating costs. Rubbish that does not find its way to trash barrels or the dumpground becomes litter (4).

The solid waste problem can be controlled if the municipal governments use one of several methods for the ultimate disposal of the trash they collect. Some trash can be recycled, the rest can be buried or burned. The solutions of burning or recycling solid waste are more to man's benefit. When the waste is buried it can be used as a resource for more land area, and when it is recycled it prevents new solid waste from being manufactured. A combination of these solutions needs to be used, because each method has its limitations.

Many cities are currently using the incinerator method of disposal. Although this process reduces the solid waste to ten per cent of its original volume, it is impractical for several reasons; the cost is high because it requires building and operating a plant and the use of an additional method to dispose of the waste which cannot be incinerated (5). This process also produces smoke, soot and odor which add to air pollution.

Sanitary landfill is a practical and economical revision of the old city dump. It costs about one dollar and twelve cents per ton (5). This process involves trucking solid waste to a defined area where a bulldozer compacts the material and pushes it into the site. At the end of each working day the mound of waste is covered with soil. When the mound reaches the top of the site it is covered with a three foot layer of top soil which can later be landscaped (5). Controls on sanitary landfill sites must be tight, but properly managed there will be no health hazard. Gases are controlled by diffusion channels and slotted pipe vents. Odor is controlled by filling cracks in the earth and by placing activated carbon in the tops of the slotted gas pipes. These landfilled areas can be used for a variety of purposes such as parks, recreation areas, amphitheaters, and parking lots.

Recovery and utilization is another way to handle solid waste. This process is called recycling. Recycling has only recently become a familiar word, it encompasses two general concepts: recovery by conversion which involves the chemical, biological, or physical processing of waste components to produce new by-products, and recovery by salvage which is the recovery of waste components in their original form (6). Glass is one of the major components of refuse which lends itself easily to this type of disposal.

Manufacturing companies that bottle beverages pay for the return of undamaged bottles so they can be sterilized and used again. Manufacturers are currently paying $20.00 per ton for damaged glass that is collected and brought to them (6). This glass is pulverized in the plant and used as cullet for making new glass.

In order for this damaged glass to be reused it must first be

separated by color and types. The reason for the color separation being that if colors were mixed in the cullet to be used for new glass, the color of the new glass would not be pure.

Cullet from colored glass is used to manufacture bricks and a "wool" while colorless glass cullet is used for manufacturing new glass (3).

The general types of glass are soda lime glass which would make up the largest per cent of glass and would include most bottles, window glass and light globes, borosilicate glass which is used for pyrex items and some medicinal bottles, and opalborosilicate which is used for oven bakeware and is melted with cream bottles (8). When glass of one type is melted with another type, the glass produced contains stringers or cords which eventually cause the bottle to break or shatter.

After the glass has been correctly separated in the recycling process, the returned glass is inspected as it is dumped from cartons or containers onto a conveyer belt. Bottles with aluminum caps have the top and cap knocked off and very dirty bottles are rejected and scrapped with the caps. The conveyer dumps the balance into a crusher which reduces the glass to minus 1/2 inch in diameter. Size is not important except in the air conveying system to the cullet silo.

The cullet or old glass which has been pulverized and melted to be reused in new glass is mixed into the new batch automatically in the desired proportion. There is controversy within the industry over how much cullet can be successfully used in making new glass. Columbine Glass Company of Wheat Ridge, Colorado claims that as high as 100 per cent cullet could be used for new containers, however some companies

claim not more than ten per cent of the batch should be cullet (8).

In addition to the reuse of waste glass in the industry itself, a number of other developments show promise of creating more markets for glass. Ceramic specialists at the research center in Tuscaloosa, Alabama have made a variety of attractive colored bricks by bonding approximately 94 per cent glass with six per cent industrial materials. These bricks have met the specifications of the American Society for Testing and Materials for "severe weather" facing brick (3).

These same research specialists are currently working on methods of transforming melted waste glass into a high quality glass "wool" (3), that could be used for an insulating material. They have also developed samples of a strong, honeycomb-like glass material that may be used as a lightweight aggregate for construction purposes.

At the University of Missouri, a new road building material called "glassphalt" has been developed. The use of glassphalt is still in experimental stages, a test area of 800 square feet of heavily traveled road has been laid with standard asphalt methods and equipment. Skid testing has been conducted and the mixture is holding up well without a seal coat (1).

Research and technology can greatly alleviate the problem of glass in solid waste but the consumer has a vital role in this process of recycling. People must recognize the solid waste problem in general and realize that they can play at least a small part in its solution by participating in a recycling project. It is estimated that a community could save over $50,000 in a year, if housewives would separate recyclable materials from the rest of their daily trash (9). Recycling would be easier and costs of municipal disposal would be

reduced.

In June, 1970, the Glass Containers Manufacturers Institute outlined an industry-wide plan for buying back used glass containers. There are ninety-two glass container plants in twenty-two states that are participating in the plan (10). These glass collection centers help make it easier to dispose of and re-use "one way" glass containers. In order for this plan to succeed, consumers must cooperate by taking their waste glass to the centers.

Willingness of consumers to cooperate in a recycling program which requires them to transport their own glass to a collection center has been demonstrated by citizens in the Washington, D.C. area. The eleven collection centers which are operated primarily by volunteers have been in operation nine months and average twenty-five tons of glass collection each week (11). Although this is only a small portion of the solid waste collected weekly in the District of Columbia, the idea of recycling is catching on. William Painter, director of the Washington Ecological Center says "if you look at the movement as an educational process, I'd say, yes, we're moving. The public is much more aware of us now. We are building up a steady clientele. Local governments are looking at our program" (11).

The key to the solution of our nation's solid waste problem is the education of the consumer. The national media--television, newspapers, magazine--provide the major source of information about the solid waste disposal problem. However, even though the mass media has made most people aware of the problem, it has generally failed to suggest ways in which persons can help on an individual basis. Therefore, most people simply assume that solid waste disposal is "someone

else's problem" (12). Since it is difficult for the national media to assess specific local problems, it is more desirable to advertise on a local basis.

These collection centers in Washington have set up an ecology library which has a permanent volunteer roll of 40 adults and 80 students which speak regularly at schools on the importance of recycling (11). Information on recycling is also being printed at the local level there.

Economics is a big factor in the success of recycling programs. The eleven collection centers in the Washington, D.C. area are having financial trouble. The weekly revenue from the resale of the glass is not enough to cover needed insurance policies, electrical expenses, and in some instances the transportation cost of trucking the waste to commercial plants. Although glass separated and crushed is sold for $20.00 per ton in Maryland, the cost of a truck large enough to haul several tons of glass to the plant may cost $45.00 an hour (4).

Industries and corporate efforts to encourage and participate in recycling programs get blocked at operational levels. Recycling affects the profitability of the plant which makes the process economically impractical (13).

Processing costs with regard to income and market potential is not the only consideration in the assessment of the feasibility of recycling solid waste. The cost to our society will be immeasurable if the present problems of solid waste continues to be left unsolved (5).

A report in the October, 1970 Professional Engineer states that "advantages attributable to household separation will not be sufficient to justify disadvantages related to attempts to secure the public's

cooperation" (5).

Many recycling proponents in industry and government argue that more than volunteer initiative will be required to put recycling to work on a large scale. Consumers will never think reclamation in large enough numbers to make any big difference. The vice-president of Latchford Glass Company in Southern California, B. P. Sewall, argues that "pressures will have to be brought on legislatures, the market, or both, to achieve more than token reclamation"(13).

In large cities a returnable bottle may be returned only four trips while in rural areas a bottle averages nineteen trips (14). In New York the Pepsi-Cola Company raised the deposit to five cents to protect a new float of 600,000 cases of 16 ounce returnable bottles. The float was exhausted in six months, which means that the consumers forfeited $720,000 in deposits (14).

The United States is exceeded by some foreign countries in concern about the environment. Finland has banned disposable beverage bottles. Denmark is considering doing the same and British Columbia has decreed that all beverage cans and bottles must carry a deposit (12). Now some state and local governments are enforcing recycling and more legally enforced recycling is coming. Richland County in Wisconsin has banned the sale of one-way bottles. A similar law has gone into effect in Bowie, Maryland and nonreturnable bottles are already forbidden in parks in two suburban Maryland counties. In addition over 70 ban-the-bottle proposals are now before legislators and local officials in twenty-five states (12).

In 1969, there were 74 bills at the federal level, 500 offered in various states and 135 enacted. Thirty-nine of those enacted

dealt exclusively with solid waste disposal (1).

An Orientation to Stillwater, Oklahoma

Stillwater, Oklahoma is the home of Oklahoma State University and the county seat of Payne County, Oklahoma. The city is located near the center of the state approximately 65 miles north of the Oklahoma City metropolitan area and 70 miles west of the Tulsa metropolitan area. The city's population, according to the preliminary figures of the 1970 census, is 33,000, an increase of 9,035 from 1960 (15).

Urban Planning for Stillwater

The Metropolitan Area Planning Commission of Stillwater and Payne County is responsible for planning for the increase in population of the area. Through the efforts of the commission, Stillwater has adopted a comprehensive plan which is now being implemented through the Capital Improvement Programing, this plan includes such areas as: zoning, sub-division regulations, building codes, and citizen participation.

Sanitation Disposal in Stillwater

The increase in the population of Stillwater means an increase in trash and garbage for the city to dispose of. The sanitation department of Stillwater presently employs 32 men and utilizes six closed packertype trucks to pick up trash. The refuse is collected twice weekly in residential areas and daily in commercial sections. Larger commercial and high density residential areas are served with a container pickup system (15).

The sanitary landfill is the current method used by the city for the disposal of the refuse collected. Collection of the refuse is the most costly part of the municipal refuse system. The cost of collection of the trash in the city of Stillwater in 1971 was $194,786.43, while the cost of disposal was $35,658.00 (16). All the collected trash including those items which could be recycled such as glass, aluminum, and paper, are compacted and put into the sanitary landfill.

A Voluntary Glass Collection Project in Stillwater

In the spring of 1971, the choir youth group at the First Methodist Church in Stillwater started a glass collection program in which interested persons could participate. West of the church at 400 West Seventh Street a small aluminum building was put up for storage of glass that people wished to dispose of. The glass taken there was to be clean, separated by color and type, and have the lids and caps of the containers removed.

As the building becomes full, the group works together to crush the glass, load it in a pickup and take it to the Kerr Glass Manufacturing Company in Sand Springs, Oklahoma. The manufacturing company pays them $20.00 per ton (8).

The group has had good cooperation on this project from the people of Stillwater. Sometimes the building provided for the storage of the glass fills up faster than the members of the group can crush and ship the glass. They have found storage for the glass after it is crushed and transportation to Sand Springs are problems. The project started out as a way to help clean up the environment as well as to raise money for a trip. It has continued to serve both purposes.

Summary

Through a review of literature it is evident that collecting glass for the purpose of recycling is possible. It is becoming more and more important for communities to consider positive action programs. Some interest for a recycling program has been shown in Stillwater, Oklahoma. In Chapter III the writer will discuss procedures for learning of the attitudes of homemakers toward their roles in a glass collection program in Stillwater.

CHAPTER III

PROCEDURES

Currently, the sanitary landfill method of disposal is adequately serving the need for disposal of waste in the City of Stillwater, and this method is well known throughout the state for its efficient operation (17). Although this method of disposal is working adequately now, the future must be considered. The method of recycling solid waste will some day be economically feasible for the average American city to use for wastes such as glass, paper and aluminum.

The purpose of this study is to determine whether or not the age or the composition of the family makes any difference in a homemaker's willingness to cooperate in a glass recycling program.

Permission to Conduct the Study

This researcher proposed to study the attitude of the homemaker toward a glass recycling project by use of a questionnaire interview schedule if permission could be secured from the city. She believed such permission was needed since raising the question with homemakers could seem to imply that the city was considering a glass collection program. Permission for the study was granted during an office interview with the Assistant City Manager, Lloyd Harrell.

Development of the Instrument

After receiving permission to conduct the study, the second phase was selecting an instrument which would secure the necessary data. The type of information desired consisted of simple factual data related to the age of the homemaker, the composition of her family and her attitude concerning her role in a glass recycling project.

A questionnaire was developed by the researcher to be used by interviewers.

Construction of the Questionnaire

The questionnaire as developed consisted of 13 questions, which could be grouped into different categories:

1. Questions 1 through 7 -- General Information: Age, Marital Status, Family Composition, Knowledge and Past Experience in Recycling of Glass.
2. Questions 8 through 13 -- Attitudes Concerning Glass Recycling Project.

The questionnaire was pretested before using it to interview the selected population. Members of the Research Methods, HEED 5102 class, Oklahoma State University, under the direction of Dr. Elizabeth Hillier, responded to the questionnaire. Following their suggestions, the questionnaire was revised. (See Appendix A).

Selection of the Population

The population for the study consisted of randomly selected homemakers in Stillwater. Through discussion with a statistician it was thought that 200 homemakers would present the perspective needed

to determine the reaction Stillwater homemakers would have toward a glass recycling program.

Two hundred homemakers' names were randomly selected from the 1971 Stillwater City Directory. The random selection was made by dividing 200 by the total number of pages in the Directory. This determined the number of names to be taken from each page.

Gathering the Data in the Study

Members of the class in Socio Economic Aspects of Housing, H&ID 4343, were contacted by this researcher and specific instructions were given each on how the interviews were to be conducted; namely,

1. The interview was to be conducted in person.
2. The nature of the study was to be explained to each person interviewed.
3. The questions were to be asked in the order they appeared on the interview schedule.

Follow-up interviews were made to the homemakers which the students found available at the time of the first call. Two more attempts to contact each homemaker were made. Of the 200 homemakers selected, 110 responded to the questionnaire, eight returned, 82 were not located.

Treatment of the Data

The data obtained from the 110 questionnaires were tabulated according to the age of the homemaker, the composition of her family, and her willingness to participate in a glass recycling project. Tables were developed on the data and the results interpreted in

terms of the most frequently occuring response indicating feelings of importance or non-importance for recycling glass and willingness or non-willingness to cooperate in a glass recycling project.

A presentation and analysis of the data in the study will be presented in Chapter IV.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The purpose of this study was to find out if age or the composition of the family makes any difference in a homemaker's attitude concerning her role in a glass recycling program which involves separate collection of glass for the purpose of recycling. As a result of this information, the last step was to draw conclusions as to whether or not the City of Stillwater could expect cooperation from homemakers if it initiated a glass recycling program.

Information was secured through use of a questionnaire. Of the 200 selected homemakers 110 were interviewed and responded to the questionnaire.

Analysis of the data in terms of mode or most frequently occuring responses led to information on:

1. The homemaker's attitude about a glass recycling program.
2. The homemaker's preference of the structure of a glass recycling program.

General Information on the Population

There were 110 individual homemakers participating in this study. There were 37 homemakers in the age bracket of 30 or younger, and 73 in the age bracket 31 and over. There were 11 homemakers with no children, 21 with no children at home, and 79 with children at home.

Thirty-four of the homemakers interviewed had previously participated in a recycling program, 76 knew the meaning of the word recycle and 57 knew uses for recycled glass. A detailed tabulation of the previously discussed information can be found in Appendix B. Questions 1-3 were primarily stated to introduce the subject to the respondent.

Age Attitudes

The attitudes of the homemakers concerning the importance felt for recycling glass, their willingness to cooperate by separating glass, their willingness to wash the glass before disposing of it, their willingness to take glass to a central disposal point and their willingness to pay an extra fee for separation after collection was tabulated and percentages determined. The population was first divided into two age brackets. One group consisted of the homemakers 30 and younger, and the other group consisted of those 31 and over. The answers for questions 8-13 were in five categories, Strongly Agree, Agree, Uncertain, Disagree, Strongly Disagree. In making the percentage tallies the answers in the Strongly Agree and Agree groups were added together and the answers in the Uncertain[1], Disagree and Strongly Disagree groups were added together. (Appendix C).

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[1] "Uncertain" is combined in the disagreement answers because the majority either agreed or strongly agreed. The total number of "uncertain" answers was not large enough to show separately in the tables.

TABLE I

COMPARISON OF ATTITUDES THAT HOMEMAKERS 31 AND OVER HAVE TOWARD THE IMPORTANCE OF RECYCLING GLASS AND THEIR WILLINGNESS TO COOPERATE BY SEPARATING GLASS FROM OTHER WASTES

Attitude Concerning the Recycling of Glass	Attitude Concerning Separating Glass From Other Waste: Strongly Disagree to Uncertain	Attitude Concerning Separating Glass From Other Waste: Agree to Strongly Agree	
Agree to Strongly Agree	3 50.0%	61 91.05%	64
Strongly Disagree to Uncertain	3 50.0%	6 8.95%	9
	6	67	73

The percentages shown in Table I indicate that 91.5 per cent of the homemakers 31 and older who thought recycling glass was important were willing to take action and separate their glass from their other waste. Of the homemakers 31 and older, 50 per cent of those who were unwilling to separate their glass had indicated that they felt recycling of glass was important. However, those who refused to separate their glass were only 8.2 per cent of the total 73 respondents. The large majority of these homemakers, 83.56 per cent, agreed recycling glass was important and agreed to separate their glass.

TABLE II

COMPARISON OF ATTITUDES THAT HOMEMAKERS 30 AND YOUNGER HAVE TOWARD THE IMPORTANCE OF RECYCLING GLASS AND THEIR WILLINGNESS TO CO-OPERATE BY SEPARATING GLASS FROM OTHER WASTES

Attitude Concerning the Recycling of Glass	Attitude Concerning Separating Glass From Other Wastes: Strongly Disagree To Uncertain	Attitude Concerning Separating Glass From Other Wastes: Agree to Strongly Agree	
Agree to Strongly Agree	2 100%	33 94.3%	35
Strongly Disagree to Uncertain	0 0.0%	2 5.7%	2
	2	35	37

The percentages shown in the above table indicate that 94.3 per cent of the homemakers 30 and younger who felt that the recycling of glass was important were also willing to take action and separate their glass. The other 5.7 per cent who were willing to separate their glass did not feel recycling of glass was important. Of the homemakers who were unwilling to separate their glass 100 per cent had indicated they felt recycling glass was important, but this was only 5.4 per cent of the total 37 homemakers 30 and younger. Of the total 37 respondents 89.19 per cent agreed glass recycling was important and were willing to separate their glass.

A comparison of Tables I and II indicates a slightly higher per

cent of homemakers 30 and younger who thought recycling was important and were willing to separate their glass from their other trash and a slightly higher per cent of homemakers 31 and older who did not feel recycling glass was important were willing to cooperate by separating their glass.

TABLE III

COMPARISON OF ATTITUDES THAT HOMEMAKERS 31 AND OLDER HAVE TOWARD THE IMPORTANCE OF RECYCLING GLASS AND THEIR WILLINGNESS TO WASH THE GLASS BEFORE SEPARATING IT FOR DISPOSAL

Attitude Concerning the Recycling of Glass	Attitude Concerning Washing Glass Before Disposing of It: Strongly Disagree to Uncertain	Attitude Concerning Washing Glass Before Disposing of It: Agree to Strongly Agree	
Agree to Strongly Agree	9 75%	55 90.2%	64
Strongly Disagree to Uncertain	3 25%	6 9.8%	9
	12	61	73

The percentage shown in Table III indicate that 90.2 per cent of the homemakers 31 and older who felt recycling of glass was important would be willing to wash their glass before disposing of it. Of the

homemakers who indicated an unwillingness to wash the glass before disposing of it, 75 per cent had indicated they felt recycling glass was important. Of these homemakers 31 and older, 4.1 per cent did not think recycling glass was important and would not agree to wash the glass before disposing of it. Of the homemakers 31 and older 75.34 per cent agreed that recycling of glass was important and agreed to separate their glass and wash it.

TABLE IV

COMPARISON OF ATTITUDES THAT HOMEMAKERS 30 and YOUNGER HAVE TOWARD THE IMPORTANCE OF RECYCLING GLASS AND THEIR WILLINGNESS TO WASH THE GLASS BEFORE SEPARATING IT FOR DISPOSAL

Attitude Concerning the Recycling of Glass	Attitude Concerning Washing Glass Before Disposing of It: Strongly Disagree to Uncertain	Attitude Concerning Washing Glass Before Disposing of It: Agree to Strongly Agree	
Agree to Strongly Agree	7 100%	28 93.3	35
Strongly Disagree to Uncertain	0 0.0%	2 6.7%	2
	7	30	37

The percentages shown in Table IV indicate that 93.3 per cent of the homemakers 30 and younger who felt that recycling of glass was important would be willing to wash their glass before disposing of it. Of these homemakers 20 per cent who felt recycling glass was important would not agree to wash the glass before disposing of it. One hundred per cent of the homemakers who refused to wash the glass had indicated they thought recycling glass was important. Of the 37 homemakers who answered the questions 18.1 per cent indicated they would not wash glass before disposing of it. Of the total 37 homemakers 75.67 per cent agreed recycling was important and agreed to wash their glass before disposing of it.

In comparing Tables III and IV, it was found there was a slightly higher percentage of homemakers 30 and younger who thought recycling glass was important and would be willing to wash it before disposing of it. There were also 25 per cent more homemakers in the 30 and younger bracket who felt recycling glass was important but refused to wash it before disposing of it.

In comparing Tables I and III it is indicated that of the homemakers 31 and older who felt glass recycling was important there are 25 per cent who are willing to take action and separate the glass but would not agree to wash the glass before separating it for disposal.

TABLE V

COMPARISON OF ATTITUDES THAT HOMEMAKERS 31 AND OLDER HAVE TOWARD THE IMPORTANCE OF RECYCLING GLASS AND THEIR WILLINGNESS TO TAKE GLASS TO A CENTRAL POINT FOR DISPOSAL

Attitude Concerning the Recycling of Glass	Attitude Concerning Taking Glass To a Central Point: Strongly Disagree to Uncertain	Attitude Concerning Taking Glass To a Central Point: Agree to Strongly Agree	
Agree to Strongly Agree	41 85.4%	23 92.0%	64
Strongly Disagree to Uncertain	7 14.6%	2 8.0%	9
	48	25	73

The percentages shown in Table V indicate 85.4 per cent of the homemakers 31 and older who were uncertain, disagreed or strongly disagreed with the recycling program being structured with central collection points agreed that recycling glass was important. Of those who indicated they would take their glass to central points 92 per cent felt recycling was important. Of the total sample 56.17 per cent agreed glass recycling was important but would not agree to a central collection point system.

TABLE VI

COMPARISON OF ATTITUDES THAT HOMEMAKERS 30 AND YOUNGER HAVE TOWARD THE IMPORTANCE OF RECYCLING GLASS AND THEIR WILLINGNESS TO TAKE GLASS TO A CENTRAL POINT FOR DISPOSAL

Attitude Concerning the Recycling of Glass	Attitude Concerning Taking Glass To a Central Point: Strongly Disagree to Uncertain	Attitude Concerning Taking Glass To a Central Point: Agree to Strongly Agree	
Agree to Strongly Agree	22 92%	13 100%	35
Strongly Disagree to Uncertain	2 8.0%	0 0.0%	2
	24	13	37

The percentages shown in Table VI indicate that 92 per cent of the homemakers 30 and younger who were against the central collection point for glass, felt recycling of glass was important. One hundred per cent of the homemakers who agreed and strongly agreed with the central collection point program, had said they felt recycling glass was important.

A comparison of Tables V and VI indicates that homemakers in the 31 and over age bracket are a little more willing to take their glass to central collection point centers than were homemakers in the 30 and

younger age bracket. Of homemakers, 31 and older, 85.4 per cent were unwilling to take their glass to the collection center as compared with 92 per cent from the 30 and younger group.

TABLE VII

COMPARISON OF ATTITUDES OF HOMEMAKERS 31 AND OLDER TOWARD TAKING GLASS TO A CENTRAL POINT FOR DISPOSAL OR PAYING AN EXTRA FEE FOR IT TO BE SEPARATED AFTER COLLECTION

Attitude Concerning Central Point Disposal	Attitude Concerning Payment of Fee: Strongly Disagree to Uncertain	Attitude Concerning Payment of Fee: Agree to Strongly Agree	
Agree to Strongly Agree	21 36.2%	4 26.7%	25
Strongly Disagree to Uncertain	37 63.8%	11 73.3%	48
	58	15	73

The percentages shown in Table VII indicate that 63.8 per cent of the homemakers 31 and older who were not in favor of a central point collection were also against paying a fee for separation of glass after collection. Of those indicating they would cooperate with

the central point collection center only 26 per cent were willing to pay a fee for separation of glass after collection. Of the total sample 50.68 per cent were uncertain or disagreed with the payment of a fee for separation of glass after collection.

TABLE VIII

COMPARISON OF ATTITUDES OF HOMEMAKERS 30 AND YOUNGER TOWARD TAKING GLASS TO A CENTRAL POINT FOR DISPOSAL OR PAYING AN EXTRA FEE FOR IT TO BE SEPARATED AFTER COLLECTION

Attitude Concerning Central Point Disposal	Attitude Concerning Payment of Fee: Strongly Disagree to Uncertain	Attitude Concerning Payment of Fee: Agree to Strongly Agree	
Agree to Strongly Agree	8 32%	5 42%	13
Strongly Disagree to Uncertain	17 68%	7 58%	24
	25	12	37

The percentages shown in Table VIII indicate that 68 per cent of the homemakers 30 and younger who were not in favor of central collection points were also against paying a fee for separation of glass

after collection. Of those indicating they would cooperate with the central collection point plan, 42 per cent would agree to pay a fee for separation after collection. Of the total 37 homemakers, 45.94 per cent, disagreed with both the central point disposal plan and the payment of a fee for separation of glass after collection.

A comparison of Tables VII and VIII indicate that 49 per cent of the homemakers who were interviewed would not agree to the central collection point system or to a fee payment for separation of glass after collection.

A slightly larger per cent (68 per cent) of the homemakers 30 and younger, as compared with 63.8 per cent of those 31 and older, disagreed with both the central point collection center and the fee payment. This indicates that homemakers 31 and older may be a little more willing to do more in a glass recycling program than homemakers 30 and younger.

Family Composition Attitudes

The attitudes of the homemakers concerning the importance of recycling glass, their willingness to cooperate by separating their glass, their willingness to wash their glass before disposing of it, their willingness to take glass to a central disposal point and their willingness to pay an extra fee for the separation of glass after collection were tabulated in percentages.

The homemakers were divided into two groups, the first group consisted of those with no children and those with no children at home, and the second group consisted of those with children at home. Answers for questions eight through thirteen were in five categories,

Strongly Agree, Agree, Uncertain, Disagree and Strongly Disagree. In making the percentage tables the answers in the Strongly Agree and Agree groups were added together and the answers in the Uncertain, Disagree, and Strongly Disagree groups were added together.

TABLE IX

COMPARISON OF ATTITUDES THAT HOMEMAKERS WITH NO CHILDREN OR NO CHILDREN AT HOME HAVE TOWARD THE IMPORTANCE OF RECYCLING GLASS AND THEIR WILLINGNESS TO COOPERATE BY SEPARATING GLASS FROM OTHER WASTE

Attitude Concerning the Recycling of Glass	Attitude Concerning Separating Glass: Strongly Disagree to Uncertain	Attitude Concerning Separating Glass: Agree to Strongly Agree	
Agree to Strongly Agree	1 50.0%	25 86.2%	26
Strongly Disagree to Uncertain	1 50.0%	4 13.8%	5
	2	29	31

The percentages shown in this table indicate that 86.2 per cent of the homemakers without children at home thought recycling was important and were willing to take action and separate their glass from

their other waste. There were only six, or 12.9 per cent of the homemakers with no children or no children at home that did not agree that recycling glass was important and were unwilling to separate their glass. Of the total 31 homemakers, 80.64 per cent agreed recycling was important and agreed to separate their glass.

TABLE X

COMPARISON OF ATTITUDES THAT HOMEMAKERS WITH CHILDREN AT HOME HAVE TOWARD THE IMPORTANCE OF RECYCLING GLASS AND THEIR WILLINGNESS TO COOPERATE BY SEPARATING GLASS FROM OTHER WASTE

Attitude Concerning the Recycling of Glass	Attitude Concerning Separating Glass: Strongly Disagree to Uncertain	Attitude Concerning Separating Glass: Agree to Strongly Agree	
Agree to Strongly Agree	0 0.0%	73 92.4%	73
Strongly Disagree to Uncertain	0 0.0%	6 7.6%	6
	0	79	79

The percentages shown in the above table indicate that 92.4 per cent of the homemakers with children at home thought recycling glass

was important and were willing to take action by separating their glass from their other waste. There were no homemakers with children at home who did not agree that recycling glass was important and none of these homemakers refused to separate their glass.

TABLE XI

COMPARISON OF ATTITUDES THAT HOMEMAKERS WITH NO CHILDREN OR NO CHILDREN AT HOME HAVE TOWARD THE IMPORTANCE OF RECYCLING GLASS AND THEIR WILLINGNESS TO WASH GLASS BEFORE DISPOSING OF IT

Attitude Concerning the Recycling of Glass	Attitude Concerning Washing of Glass Before Disposing of It: Strongly Disagree to Uncertain	Attitude Concerning Washing of Glass Before Disposing of It: Agree to Strongly Agree	
Agree to Strongly Agree	2 67%	24 86%	26
Strongly Disagree to Uncertain	1 33%	4 14%	5
	3	28	31

The percentages shown in Table XI indicate that 86 per cent of the homemakers with no children or no children at home thought glass re-

cycling was important and were willing to wash the glass before disposing of it. Of homemakers who refused to wash their glass, 67 per cent or two of the three, had indicated they thought recycling glass was important. Of the total 31 homemakers, 77.41 per cent, agreed recycling is important and agreed to wash their glass before disposing of it.

TABLE XII

COMPARISON OF ATTITUDES THAT HOMEMAKERS WITH CHILDREN AT HOME HAVE TOWARD THE IMPORTANCE OF RECYCLING GLASS AND THEIR WILLINGNESS TO WASH GLASS BEFORE DISPOSING OF IT

Attitude Concerning the Recycling of Glass	Attitude Concerning Washing of Glass Before Disposing of It: Strongly Disagree to Uncertain	Attitude Concerning Washing of Glass Before Disposing of It: Agree to Strongly Agree	
Agree to Strongly Agree	14 87.5%	59 93.7%	73
Strongly Disagree to Uncertain	2 12.5%	4 6.3%	6
	16	63	79

The percentages shown in Table XII indicate that 93.7 per cent of the homemakers with children at home thought recycling was important and were willing to wash their glass before they disposed of it. Of those who refused to wash their waste glass, 87 per cent had agreed that recycling glass was important. Of the respondents, 64.54 per cent agreed recycling glass was important and agreed to wash their glass before disposing of it.

A comparison of Tables XI and XII indicates that a slightly higher per cent of homemakers with children at home think recycling glass is important and are willing to cooperate by washing it before they dispose of it.

A comparison of Tables IX and XI indicates that the same per cent of homemakers with no children or no children at home thought recycling glass was important, would separate it from their other waste and would wash it before disposing of it.

A comparison of Tables X and XII indicates that a high per cent of homemakers with children at home feel recycling glass is important and are willing to separate their glass from other waste but a much lower per cent agreed to wash their glass before disposing of it.

This indicates that although many homemakers feel recycling glass is important and are willing to cooperate by separating their glass, they would not agree to put out more effort to have the glass clean for recycling.

CHAPTER XIII

COMPARISON OF ATTITUDES THAT HOMEMAKERS WITH NO CHILDREN OR NO CHILDREN AT HOME HAVE TOWARD RECYCLING GLASS AND THEIR WILLINGNESS TO TAKE IT TO CENTRAL POINTS FOR DISPOSAL

Attitude Concerning the Recycling of Glass	Attitude Concerning Central Point Disposal: Strongly Disagree to Uncertain	Attitude Concerning Central Point Disposal: Agree to Strongly Agree	
Agree to Strongly Agree	18 82.0%	8 89.0%	26
Strongly Disagree to Uncertain	4 18.0%	1 11.0%	5
	22	9	31

The percentages shown in Table XIII indicates that 89 per cent of homemakers with no children or no children at home agree recycling of glass is important and are willing to cooperate by taking their glass to central collection points. Of these homemakers 82 per cent who would not take their glass to central points had agreed that glass recycling was important. Of the total homemakers (31) 58.06 per cent agreed that recycling glass is important but did not agree to the central point collection system.

TABLE XIV

COMPARISON OF ATTITUDES THAT HOMEMAKERS WITH CHILDREN AT HOME HAVE TOWARD THE IMPORTANCE OF RECYCLING GLASS AND THEIR WILLINGNESS TO TAKE GLASS TO CENTRAL POINTS FOR DISPOSAL

Attitude Concerning the Recycling of Glass	Attitude Concerning Central Point Disposal: Strongly Disagree to Uncertain	Attitude Concerning Central Point Disposal: Agree to Strongly Agree	
Agree to Strongly Agree	45 90.0%	28 96.6%	73
Strongly Disagree to Uncertain	5 10.0%	1 3.4%	6
	50	29	79

The percentages shown in Table XIV indicate that 96.6 per cent of the homemakers with children at home who agree to take their glass to central points had also agreed that recycling glass is important, however, 90 per cent of those with children at home who would not agree to take glass to central collection points agreed recycling glass is important. Of the total sample 56.96 per cent agreed recycling is important but did not agree to the central collection point plan.

A comparison of Tables XIII and XIV indicates that homemakers without children or with no children living at home are less willing to take their glass to central collection points than homemakers with children at home. Homemakers with children at home felt recycling glass was important but a slightly higher per cent of these homemakers would not agree to take their glass to central collection points.

TABLE XV

COMPARISON OF ATTITUDES THAT HOMEMAKERS WITH NO CHILDREN OR NO CHILDREN AT HOME HAVE TOWARD TAKING GLASS TO CENTRAL POINTS FOR DISPOSAL OR PAYING AN EXTRA FEE FOR SEPARATION AFTER COLLECTION

Attitude Concerning Central Point Disposal	Attitude Concerning Payment of Fee: Strongly Disagree to Uncertain	Attitude Concerning Payment of Fee: Agree to Strongly Agree	
Agree to Strongly Agree	8 31.0%	1 20.0%	9
Strongly Disagree to Uncertain	18 69.0%	4 80.0%	22
	26	5	31

The percentages shown in Table XV indicate that more homemakers

without children at home preferred to take glass to a collection point rather than pay a fee for separation after collection. The majority of these homemakers, 58.06%, would not agree to take glass to central points nor would they agree to pay a fee for separation of glass after collection.

TABLE XVI

COMPARISON OF ATTITUDES THAT HOMEMAKERS WITH CHILDREN AT HOME HAVE TOWARD TAKING GLASS TO CENTRAL POINTS FOR DISPOSAL OR PAYING AN EXTRA FEE FOR SEPARATION OF GLASS AFTER COLLECTION

Attitude Concerning Central Point Disposal	Attitude Concerning Payment of Fee: Strongly Disagree to Uncertain	Attitude Concerning Payment of Fee: Agree to Strongly Agree	
Agree to Strongly Agree	26 38.0%	3 30.0%	29
Strongly Disagree to Uncertain	43 62.0%	7 60.0%	50
	69	10	79

The percentages shown in Table XVI indicate homemakers with chil-

dren at home would prefer to take glass to central points rather than pay a fee for separation after collection. The majority of these homemakers, 54.43 per cent, were like the homemakers without children at home, they did not agree to take their glass to central points nor did they agree to pay a fee for separation of glass after collection.

Summary of Data

Analysis of the data in the study lead to information on (1) homemakers attitude about a glass recycling program and (2) homemakers preference of the structure of a glass recycling program.

The percentage tables indicated that neither age nor the composition of the family makes much difference in a homemaker's attitude concerning her role in a glass recycling program. The percentage of homemakers who thought recycling glass is important was high in all four brackets. Homemakers 30 and younger ranked highest with 94.59 per cent that agree. Homemakers with children at home ranked next with 92.4 per cent in agreement. The group of homemakers 31 and older were next with 87.67 per cent in agreement and homemakers with no children or no children at home were last with 83.87 per cent in agreement. This indicated that young homemakers are the most concerned while homemakers with no children or no children at home are the least concerned.

The per cent willing to cooperate by separating their glass was also consistently high for all four brackets. However, homemakers in all four brackets showed somewhat less willingness to cooperate by washing their glass before they dispose of it and much less willingness to take it to a central collection point.

The large majority in all four brackets did not agree to pay the fee for separation of glass after it was collected. They preferred to separate the glass themselves rather than pay to have it separated by the city.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

There is a large amount of household waste in each home. If household waste was separated before it was collected much of it could be recycled rather than taken to the city dump. Glass makes up six per cent (1) of our solid waste, this is not a large per cent but if glass were separated for the purpose of recycling, it would be a beginning of the answer for solid waste disposal and we have to start somewhere.

The purpose of this study was to ascertain attitudes of homemakers in Stillwater, Oklahoma toward their role in a glass recycling program and to determine if these attitudes are different for homemakers of different ages and family makeup.

Summary of Findings

The homemakers who participated in the study indicated that they felt recycling of glass was important to our environment and that they were willing to take action and separate their glass from their other household waste. The large majority agreed to wash their waste glass before disposing of it.

Although they agreed separation of glass was important and they would separate and wash their glass, the majority did not agree to a central point collection center where they would take their glass themselves. The majority also did not agree to pay a fee to the

city for separation of glass after it was collected. They preferred to separate their glass themselves and have the city collect the glass at their home.

The study indicated that neither age nor the composition of the family makes any difference in the answers the homemakers gave to the questions which concerned their attitudes about their role in a glass recycling program. The per cent of homemakers was consistently high and in agreement that separation of glass is important to our environment and that they were willing to separate their glass from their other waste. Although the per cent of those who agreed to wash their glass was smaller, it was still high in both age groups (30 and younger and 31 and older) and both family composition groups, (the groups with no children or no children at home and the groups with children).

Conclusions

It is apparent from this study that homemakers have a cooperative attitude about a glass recycling program. The findings imply that the city could expect the homemaker's cooperation if they ask them to separate and wash their glass. The implications were that homemakers would want the city to collect the glass they separate. If the program was structured with central point collection centers, the city could expect far less cooperation from the homemakers.

The study also strongly implies that, if the city structured the program so that homemakers paid a fee for separation of their glass after collection, homemakers would be very unwilling to cooperate.

Recommendations for Future Studies

This study surveyed the attitudes homemakers have concerning recycling glass, very often there is a discrepancy in what people say they will do and what they will do. A study which would survey the behavior of homemakers participating in a recycling program needs to be conducted to see if the city would get the cooperation from the homemakers that this study indicates.

This study indicates that if the City of Stillwater were to initiate a glass recycling program it would be well received by the homemaker. However, further study needs to be conducted on the economics of such a program for Stillwater.

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APPENDIX A

ATTITUDES CONCERNING THE RECYCLING OF GLASS IN STILLWATER, OKLAHOMA

Interview Questionnaire

Interview Number

_____ 1. What is your present age?

2. What is your marital status?

_____ 1. Single
_____ 2. Married
_____ 3. Divorced
_____ 4. Widowed

_____ 3. If you have children, how many children do you have?

_____ 4. How many children under age 24 are living at home?

5. Have you ever participated in a recycling program?

_____ 1. Yes
_____ 2. No

6. Do you know what the term recycle means?

_____ 1. Yes
_____ 2. No

7. If your answer is yes, do you know any of the uses for recycled glass?

_____ 1. Yes
_____ 2. No

Please answer the following questions by checking the blank by the word that best describes how you feel about the question.

8. Do you feel the recycling or reuse of glass is important to our environment?

_____ 1. Strongly agree
_____ 2. Agree
_____ 3. Uncertain
_____ 4. Disagree
_____ 5. Strongly disagree

9. As a homemaker, do you think you would be willing to cooperate in a glass recycling program by separating your waste glass from your other household waste?

_____ 1. Strongly agree
_____ 2. Agree
_____ 3. Uncertain
_____ 4. Disagree
_____ 5. Strongly disagree

10. If glass was collected separately, would you be responsible for providing a separate container for the glass you wished to dispose of?

_____ 1. Strongly agree
_____ 2. Agree
_____ 3. Uncertain
_____ 4. Disagree
_____ 5. Strongly disagree

11. Would you be willing to rinse the dirt or food residue off the glass containers and remove caps, lids and aluminum neck rings?

_____ 1. Strongly agree
_____ 2. Agree
_____ 3. Uncertain
_____ 4. Disagree
_____ 5. Strongly disagree

12. Would you prefer the city to set up facilities at central points in the city where you could take your glass?

_____ 1. Strongly agree
_____ 2. Agree
_____ 3. Uncertain
_____ 4. Disagree
_____ 5. Strongly disagree

13. Would you rather pay the city an extra fee and have the glass separated after it is collected?

_____ 1. Strongly agree
_____ 2. Agree
_____ 3. Uncertain
_____ 4. Disagree
_____ 5. Strongly disagree

APPENDIX B

A TABULATION OF THE ANSWERS FOR QUESTIONS 1-3

Participated in Recycling Program	30 years & Younger	31 years & Over	Total
Had	10	24	34
Had not	27	49	76
	37	73	110

Participated in Recycling Program	No children	No children at home	Children at home	Total
Had	3	7	25	35
Had not	8	13	54	75
	11	20	79	110

Knew Meaning of Word Recycle	30 years & Younger	31 years & Over	Total
Knew Meaning	35	41	76
Did not know Meaning	2	32	34
	37	73	110

Knew Meaning of Word Recycle	No children	No children at home	Children at home	Total
Knew Meaning	9	19	73	101
Did not know Meaning	2	1	6	9
	11	20	79	110

Knew uses for recycled glass	30 years & Younger	31 years & Over	Total
Knew Uses	14	43	57
Did not know Uses	23	30	53
	37	73	110

Knew Uses for Recycled Glass	No children	No children at home	Children at home	Total
Knew Uses	5	12	40	57
Did not know Uses	6	8	39	53
	11	20	79	110

APPENDIX C

A TABULATION OF THE ANSWERS FOR HOMEMAKERS WHO WERE UNCERTAIN

	30 & Younger	31 & Older	Total
Do you feel recycling of glass is important to our environment?	2	8	10
Would you separate your glass from your other waste?	2	4	6
Would you provide a separate container for your glass?	1	9	10
Would you rinse the food and dirt from your glass and remove lids and aluminum neckrings?	4	6	10
Would you prefer to have a central point collection center where you could take your glass?	7	13	20
Would you be willing to pay an extra fee for separation of glass after collection	6	6	12

	No Child	No Child at Home	Child at home	Total
Do you feel recycling of glass is important to our environment?	1	3	6	10
Would you be willing to separate your glass from your other waste?	0	1	5	6
Would you be willing to provide a container for the glass you separate?	0	3	7	10
Would you be willing to rinse the dirt and food from your glass and remove the lids and aluminum neckrings?	0	1	9	10
Would you be willing to take your glass to a central collection point?	3	3	14	20
Would you be willing to pay a fee for separation of glass after collection?	2	0	10	12

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